#19 CFC
M.4.D/ #

Docket No.: K-0090B

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of
Young-Joon SONG

Certificate
FEB 24 2005
of Correction

Patent No. 6,721,299

Issued: April 13, 2004

For: PILOT SIGNALS FOR SYNCHRONIZATION AND/OR CHANNEL ESITMATION

REQUEST FOR CERTIFICATE OF CORRECTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

It is respectfully requested that a Certificate of Correction be issued for the above-identified patent.

Errors were noted in Figures 9, 12A, 14B, 16C, 18A, 25D, 26B, and 27.

PTO ERROR - As the error was made by the Patent and Trademark Office, it is believed that no fee is due under 37 C.F.R. 1.322. However, please credit or debit Deposit Account No. 16-0607 as necessary to effect entry of the attached corrections.

X APPLICANT'S ERROR - In accordance with the provisions of 37 C.F.R. 1.323 and 1.20(a), our Check No. 12698 in the amount of $100.00 is attached. Please credit or debit Deposit Account No. 16-0607 as necessary to effect entry of the attached corrections.

02/07/2005 SDENBOB1 00000033 6721299
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,721,299 B1

DATED : April 13, 2004

INVENTOR(S) : Young-Joon SONG

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Replacement Sheets for Figures 9, 12A, 14B, 16C, 18A, 26B, 25D, and 27.

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PATENT NO. 6,721,299

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FEB 2 8 2005

FIG. 12A

Frame Synchronization Words
Slot Number 1 2 3 4 5 L
C_1 = (1 1 0 1 1 1 1 1 0 0 1 0 0 0 0 0)
C_2 = (1 0 0 0 1 0 1 0 0 1 1 1 0 1 0 1)
C_3 = (1 1 0 1 1 1 0 0 0 0 1 0 0 0 1 1)
C_4 = (0 1 1 1 0 1 1 0 1 0 0 0 1 0 0 1)
C_5 = (1 0 1 1 0 0 0 0 0 1 0 0 1 1 1 1)
C_6 = (1 1 1 0 0 1 0 1 0 0 0 1 1 0 1 0)
C_7 = (0 1 0 0 0 0 1 1 1 0 1 1 1 1 0 0)
C_8 = (1 1 1 0 1 0 0 1 0 0 0 1 0 1 1 0)

FIG. 12B

$R(\tau)$ τ	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
$R_E(\tau)$	16	4	0	4	0	−4	0	−4	−16	−4	0	−4	0	4	0	4
$R_F(\tau)$	16	−4	0	−4	0	4	0	4	−16	4	0	4	0	−4	0	−4
$R_G(\tau)$	16	4	0	−4	0	4	0	−4	−16	−4	0	4	0	−4	0	4
$R_H(\tau)$	16	−4	0	4	0	−4	0	4	−16	4	0	−4	0	4	0	−4

R_1 R_2

FIG. 8

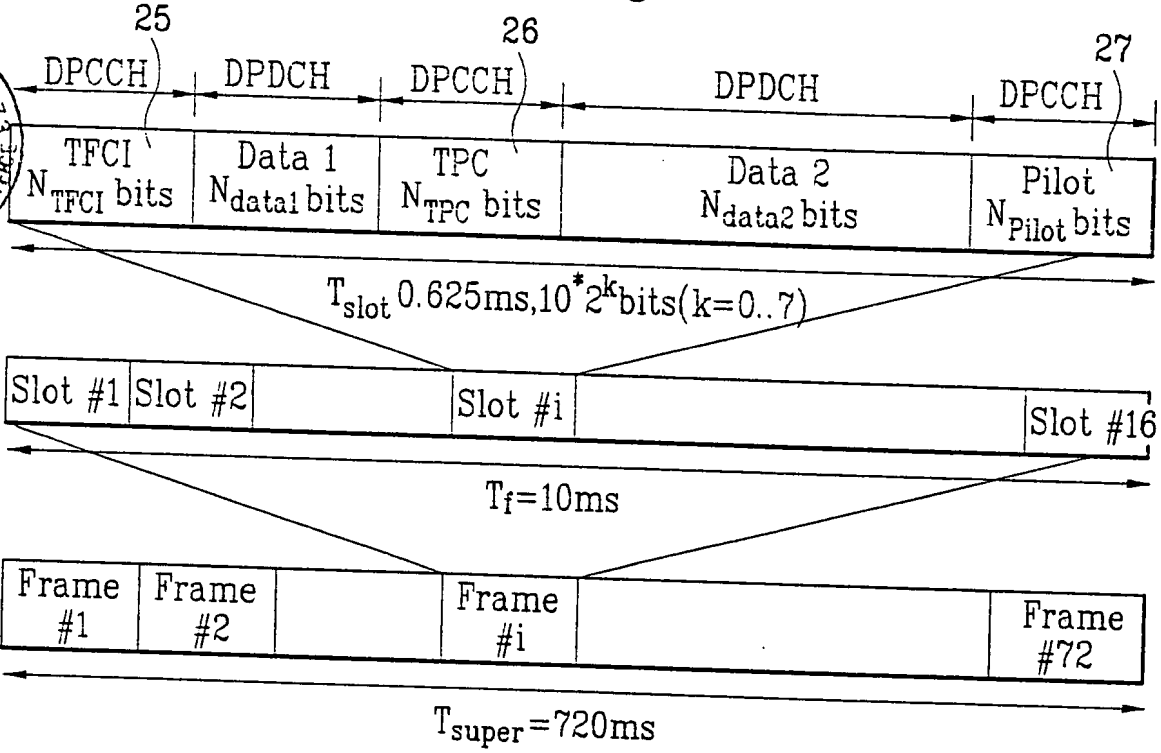


FIG. 9

Symbol rate	8ksps		16,32,64,128ksps				256,512,1024ksps							
Symbol #	0	1	0	1	2	3	0	1	2	3	4	5	6	7
Slot #1	11	11	11	11	11	11	11	11	11	11	11	11	11	10
2	11	11	11	11	11	01	11	10	11	10	11	10	11	01
3	11	10	11	01	11	01	11	10	11	01	11	11	11	01
4	11	01	11	10	11	01	11	11	11	01	11	00	11	10
5	11	10	11	10	11	11	11	11	11	00	11	01	11	10
6	11	10	11	10	11	11	11	11	11	11	11	01	11	10
7	11	01	11	01	11	00	11	10	11	11	11	01	11	10
8	11	00	11	10	11	01	11	01	11	00	11	10	11	00
9	11	00	11	11	11	00	11	11	11	10	11	00	11	01
10	11	10	11	01	11	01	11	01	11	11	11	11	11	00
11	11	10	11	11	11	10	11	10	11	10	11	11	11	10
12	11	11	11	01	11	01	11	01	11	10	11	10	11	00
13	11	10	11	00	11	01	11	10	11	01	11	11	11	10
14	11	11	11	10	11	00	11	00	11	10	11	10	11	00
15	11	00	11	01	11	00	11	01	11	10	11	00	11	00
16	11	00	11	00	11	00	11	10	11	00	11	00	11	00

FIG. 14B

	$N_{pilot} = 7$							$N_{pilot} = 8$							
Bit #	0	1	2	3	4	5	6	0	1	2	3	4	5	6	7
Slot #1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0
2	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1
3	1	0	0	1	0	1	1	1	0	1	0	1	0	1	1
4	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1
5	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0
6	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1
7	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1
8	1	1	0	1	0	0	1	1	1	1	0	1	0	1	0
9	1	0	0	1	0	1	1	1	0	1	0	1	0	1	1
10	1	0	1	1	0	0	1	1	0	1	1	1	0	1	0
11	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0
12	1	0	1	1	0	0	1	1	0	1	1	1	0	1	0
13	1	0	0	1	0	1	1	1	0	1	0	1	0	1	1
14	1	0	1	1	0	0	1	1	0	1	1	1	0	1	0
15	1	0	0	1	1	0	1	1	0	1	0	1	1	1	0
16	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1

FIG. 16C

Symbol rate	$N_{pilot}=8$				$N_{pilot}=16$							
Symbol #	0	1	2	3	0	1	2	3	4	5	6	7
Slot #1	11	11	11	10	11	11	11	10	11	11	11	01
2	11	10	11	11	11	10	11	11	11	01	11	11
3	11	00	11	01	11	00	11	01	11	11	11	01
4	11	10	11	11	11	10	11	11	11	10	11	00
5	11	11	11	10	11	11	11	10	11	00	11	01
6	11	10	11	11	11	10	11	11	11	01	11	00
7	11	11	11	01	11	11	11	01	11	00	11	10
8	11	10	11	00	11	10	11	00	11	01	11	11
9	11	00	11	01	11	00	11	01	11	00	11	10
10	11	01	11	00	11	01	11	00	11	10	11	00
11	11	11	11	10	11	11	11	10	11	00	11	10
12	11	01	11	00	11	01	11	00	11	01	11	11
13	11	00	11	01	11	00	11	01	11	11	11	10
14	11	01	11	00	11	01	11	00	11	10	11	11
15	11	00	11	10	11	00	11	10	11	11	11	01
16	11	01	11	11	11	01	11	11	11	10	11	00

FIG. 16D

Symbol rate	Symbol #	Channel	Corresponding word of length L=16
$N_{pilot}=8$	1	I-CH	C_1
		Q-CH	C_2
	3	I-CH	C_3
		Q-CH	C_4
$N_{pilot}=16$	1	I-CH	C_1
		Q-CH	C_2
	3	I-CH	C_3
		Q-CH	C_4
	5	I-CH	C_5
		Q-CH	C_6
	7	I-CH	C_7
		Q-CH	C_8

FIG. 17C

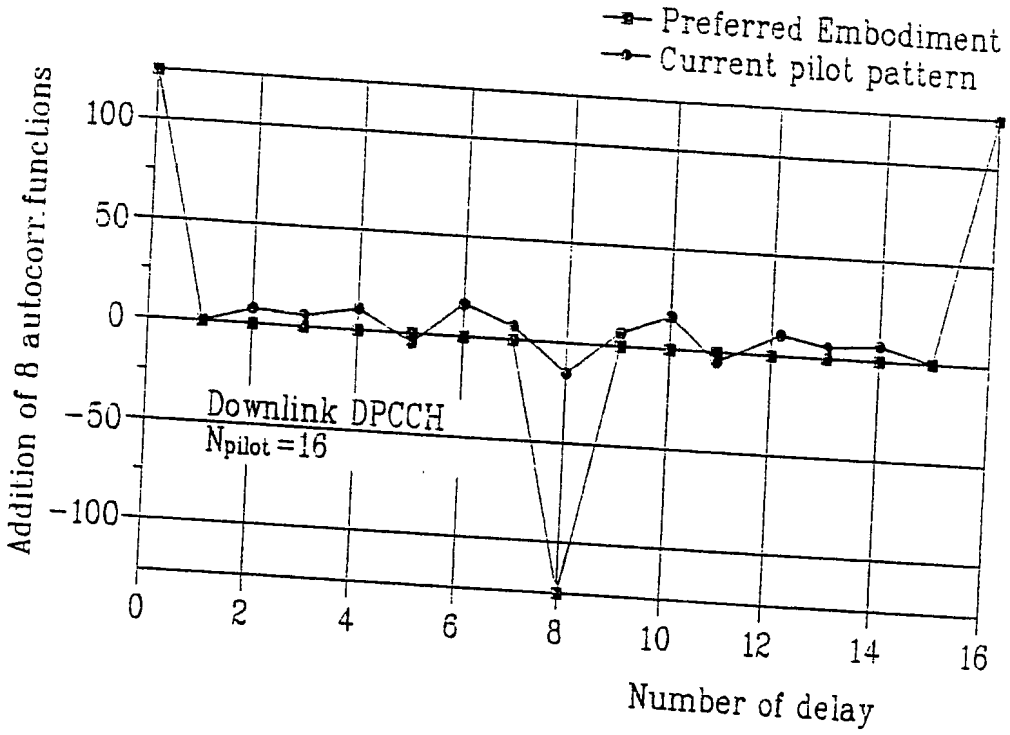


FIG. 18A

Parameters	Downlink
Slot per frame	16
Number of bits in the DPCCH (Pilot/TPC/TFCI)	4/2/0
Number of bits in the DPDCH per each slot	4
Spreading Factor (DPDCH)	512
Spreading factor (DPCCH)	512
Modulation	QPSK
3dB bandwidth	4.096MHz
Shaping filter	Root raised cosine (roll off 0.22)
Power amplifier	Ideal
Propogation channel	AWGN

FIG. 25C

	$N_{pilot} = 8$				$N_{pilot} = 16$							
Symbol #	0	1	2	3	0	1	2	3	4	5	6	7
Slot #1	11	00	00	10	11	00	00	10	11	00	00	10
2	11	00	00	01	11	00	00	01	11	10	00	10
3	11	11	00	00	11	11	00	00	11	10	00	11
4	11	10	00	01	11	10	00	01	11	00	00	00
5	11	11	00	11	11	11	00	11	11	01	00	10
6	11	00	00	10	11	00	00	10	11	11	00	00
7	11	10	00	10	11	10	00	10	11	01	00	11
8	11	10	00	11	11	10	00	11	11	10	00	11
9	11	00	00	00	11	00	00	00	11	01	00	01
10	11	01	00	10	11	01	00	10	11	01	00	01
11	11	11	00	00	11	11	00	00	11	00	00	10
12	11	01	00	11	11	01	00	11	11	00	00	01
13	11	10	00	11	11	10	00	11	11	11	00	00
14	11	01	00	01	11	01	00	01	11	10	00	01
15	11	01	00	01	11	01	00	01	11	11	00	11

FIG. 25D

Symbol rate	Symbol #	Channel	Corresponding word of length 15
$N_{pilot} = 8$	1	I-CH	$-C_3$
		Q-CH	C_4
	3	I-CH	C_1
		Q-CH	$-C_2$
$N_{pilot} = 16$	1	I-CH	$-C_3$
		Q-CH	C_4
	3	I-CH	C_1
		Q-CH	$-C_2$
	5	I-CH	$-C_7$
		Q-CH	C_8
	7	I-CH	C_5
		Q-CH	$-C_6$

FIG. 26A

Parameters	Uplink
Number of slots per frame	15
Number of bits in the DPCCH(Pilot/TPC/TFCI/FBI)	6/2/2/0
Number of bits in the DPDCH per each slot	10
Spreading factor (DPDCH)	256
Spreading factor (DPCCH)	256
Modulation	HPSK
3dB bandwidth	3.84MHz
Shaping filter	Root raised cosine (roll off 0.22)
Power amplifier	Ideal
Propagation channel	AWGN

FIG. 26B

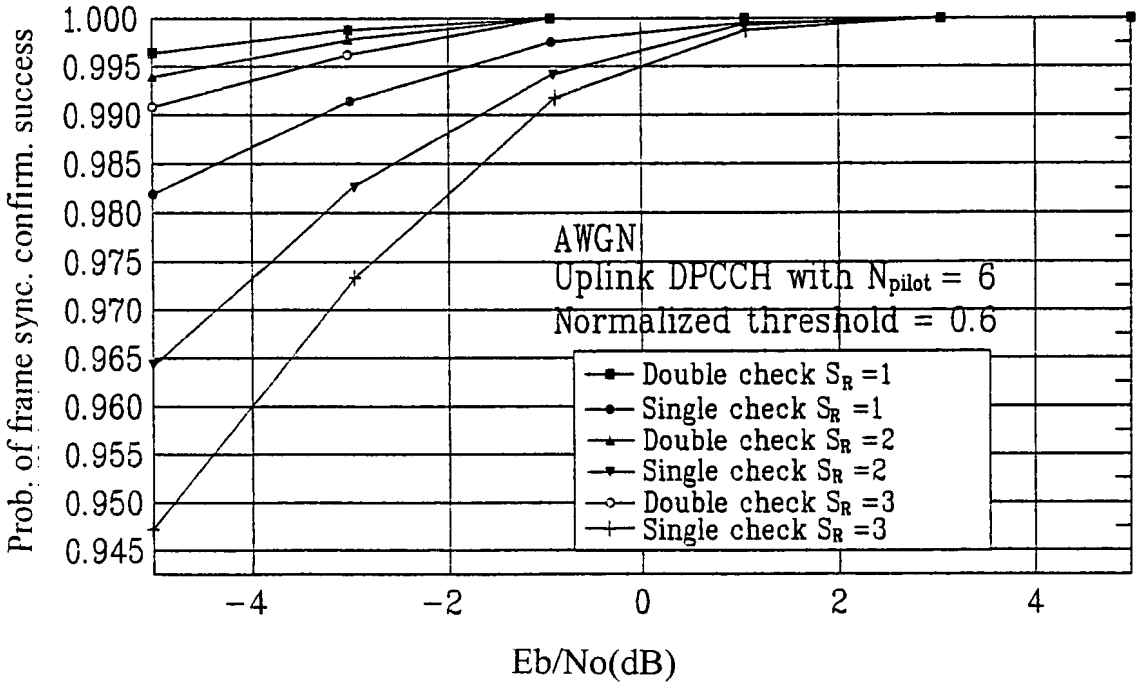


FIG. 8

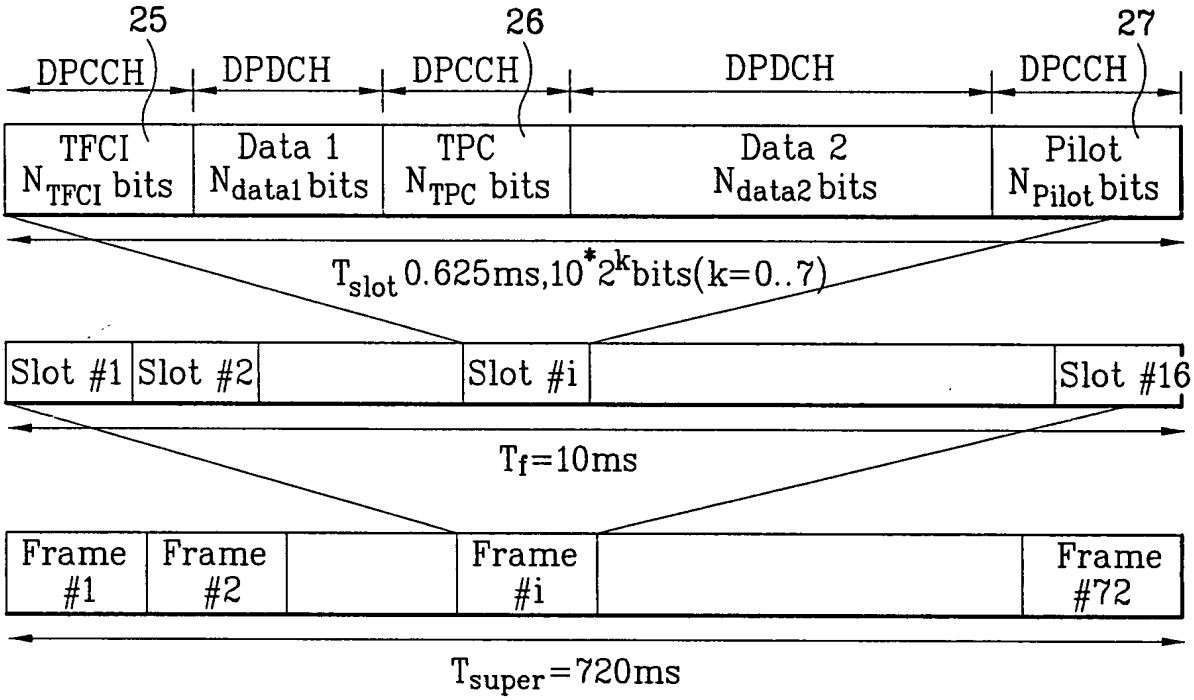


FIG. 9

Symbol

Symbol

~~Symblo~~ rate	8ksps		16,32,64,128ksps				256,512,1024ksps							
~~Symblo~~ #	0	1	0	1	2	3	0	1	2	3	4	5	6	7
Slot #1	11	11	11	11	11	11	11	11	11	11	11	11	11	10
2	11	11	11	11	11	01	11	10	11	10	11	10	11	01
3	11	10	11	01	11	01	11	10	11	01	11	11	11	01
4	11	01	11	10	11	01	11	11	11	01	11	00	11	10
5	11	10	11	10	11	11	11	11	11	00	11	01	11	10
6	11	10	11	10	11	11	11	11	11	11	11	01	11	10
7	11	01	11	01	11	00	11	10	11	11	11	01	11	10
8	11	00	11	10	11	01	11	01	11	00	11	10	11	00
9	11	00	11	11	11	00	11	11	11	10	11	00	11	01
10	11	10	11	01	11	01	11	01	11	11	11	11	11	00
11	11	10	11	11	11	10	11	10	11	10	11	11	11	10
12	11	11	11	01	11	01	11	01	11	10	11	10	11	00
13	11	10	11	00	11	01	11	10	11	01	11	11	11	10
14	11	11	11	10	11	00	11	00	11	10	11	10	11	00
15	11	00	11	01	11	00	11	01	11	10	11	00	11	00
16	11	00	11	00	11	00	11	10	11	00	11	00	11	00

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

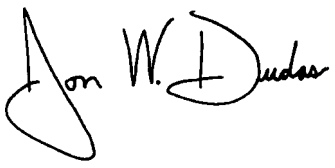
PATENT NO. : 6,721,299 B1
DATED : April 13, 2004
INVENTOR(S) : Young-Joon Song

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Replacement Drawing Sheets for Figures 9, 12A, 14B, 16C, 18A, 26B, 25D, and 27 are as follows.

Signed and Sealed this

Fifteenth Day of November, 2005



JON W. DUDAS
Director of the United States Patent and Trademark Office

FIG. 8

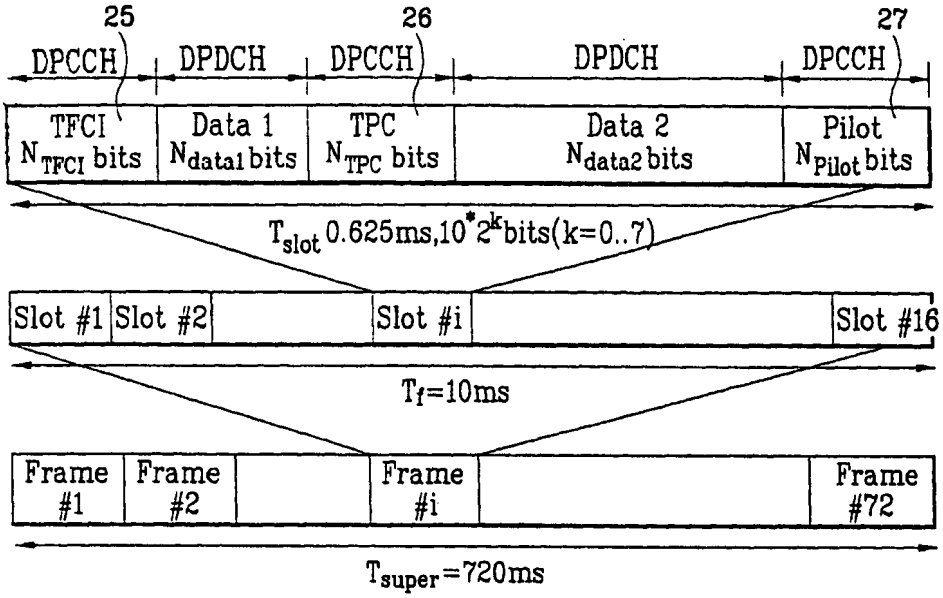


FIG. 9

Symbol rate	8ksps		16,32,64,128ksps				256,512,1024ksps							
Symbol #	0	1	0	1	2	3	0	1	2	3	4	5	6	7
Slot #1	11	11	11	11	11	11	11	11	11	11	11	11	11	10
2	11	11	11	11	11	01	11	10	11	10	11	10	11	01
3	11	10	11	01	11	01	11	10	11	01	11	11	11	01
4	11	01	11	10	11	01	11	11	11	01	11	00	11	10
5	11	10	11	10	11	11	11	11	11	00	11	01	11	10
6	11	10	11	10	11	11	11	11	11	11	11	01	11	10
7	11	01	11	01	11	00	11	10	11	11	11	01	11	10
8	11	00	11	10	11	01	11	01	11	00	11	10	11	00
9	11	00	11	11	11	00	11	11	11	10	11	00	11	01
10	11	10	11	01	11	01	11	01	11	11	11	11	11	00
11	11	10	11	11	11	10	11	10	11	10	11	11	11	10
12	11	11	11	01	11	01	11	01	11	10	11	10	11	00
13	11	10	11	00	11	01	11	10	11	01	11	11	11	10
14	11	11	11	10	11	00	11	00	11	10	11	10	11	00
15	11	00	11	01	11	00	11	01	11	10	11	00	11	00
16	11	00	11	00	11	00	11	10	11	00	11	00	11	00

FIG. 12A

Frame Synchronization Words
Slot Number 1 2 3 4 5 L
C_1 = (1 1 0 1 1 1 1 1 0 0 1 0 0 0 0 0)
C_2 = (1 0 0 0 1 0 1 0 0 1 1 1 0 1 0 1)
C_3 = (1 1 0 1 1 1 0 0 0 0 1 0 0 0 1 1)
C_4 = (0 1 1 1 0 1 1 0 1 0 0 0 1 0 0 1)
C_5 = (1 0 1 1 0 0 0 0 0 1 0 0 1 1 1 1)
C_6 = (1 1 1 0 0 1 0 1 0 0 0 1 1 0 1 0)
C_7 = (0 1 0 0 0 0 1 1 1 0 1 1 1 1 0 0)
C_8 = (1 1 1 0 1 0 0 1 0 0 0 1 0 1 1 0)

FIG. 12B

$R(\tau)$ τ	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
$R_E(\tau)$	16	4	0	4	0	−4	0	−4	−16	−4	0	−4	0	4	0	4
$R_F(\tau)$	16	−4	0	−4	0	4	0	4	−16	4	0	4	0	−4	0	−4
$R_G(\tau)$	16	4	0	−4	0	4	0	−4	−16	−4	0	4	0	−4	0	4
$R_H(\tau)$	16	−4	0	4	0	−4	0	4	−16	4	0	−4	0	4	0	−4

R_1 R_2

FIG. 14B

	$N_{pilot} = 7$							$N_{pilot} = 8$							
Bit #	0	1	2	3	4	5	6	0	1	2	3	4	5	6	7
Slot #1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0
2	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1
3	1	0	0	1	0	1	1	1	0	1	0	1	0	1	1
4	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1
5	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0
6	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1
7	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1
8	1	1	0	1	0	0	1	1	1	1	0	1	0	1	0
9	1	0	0	1	0	1	1	1	0	1	0	1	0	1	1
10	1	0	1	1	0	0	1	1	0	1	1	1	0	1	0
11	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0
12	1	0	1	1	0	0	1	1	0	1	1	1	0	1	0
13	1	0	0	1	0	1	1	1	0	1	0	1	0	1	1
14	1	0	1	1	0	0	1	1	0	1	1	1	0	1	0
15	1	0	0	1	1	0	1	1	0	1	0	1	1	1	0
16	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1

FIG. 16C

Symbol rate	$N_{pilot}=8$				$N_{pilot}=16$							
Symbol #	0	1	2	3	0	1	2	3	4	5	6	7
Slot #1	11	11	11	10	11	11	11	10	11	11	11	01
2	11	10	11	11	11	10	11	11	11	01	11	11
3	11	00	11	01	11	00	11	01	11	11	11	01
4	11	10	11	11	11	10	11	11	11	10	11	00
5	11	11	11	10	11	11	11	10	11	00	11	01
6	11	10	11	11	11	10	11	11	11	01	11	00
7	11	11	11	01	11	11	11	01	11	00	11	10
8	11	10	11	00	11	10	11	00	11	01	11	11
9	11	00	11	01	11	00	11	01	11	00	11	10
10	11	01	11	00	11	01	11	00	11	10	11	00
11	11	11	11	10	11	11	11	10	11	00	11	10
12	11	01	11	00	11	01	11	00	11	01	11	11
13	11	00	11	01	11	00	11	01	11	11	11	10
14	11	01	11	00	11	01	11	00	11	10	11	11
15	11	00	11	10	11	00	11	10	11	11	11	01
16	11	01	11	11	11	01	11	11	11	10	11	00

FIG. 16D

Symbol rate	Symbol #	Channel	Corresponding word of length L=16
$N_{pilot}=8$	1	I-CH	C_1
		Q-CH	C_2
	3	I-CH	C_3
		Q-CH	C_4
$N_{pilot}=16$	1	I-CH	C_1
		Q-CH	C_2
	3	I-CH	C_3
		Q-CH	C_4
	5	I-CH	C_5
		Q-CH	C_6
	7	I-CH	C_7
		Q-CH	C_8

FIG. 17C

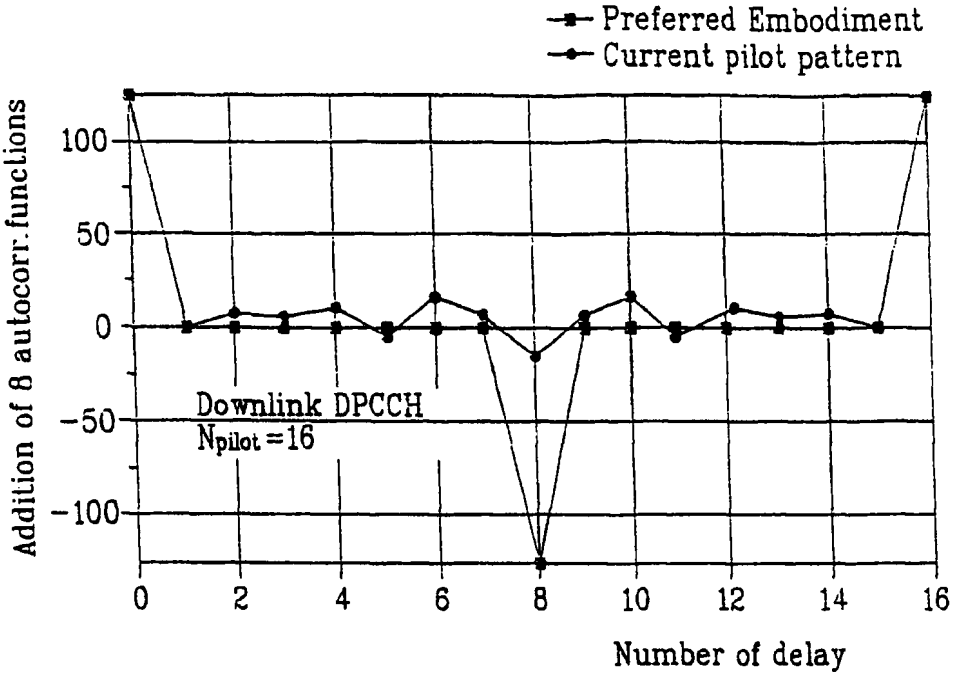


FIG. 18A

Parameters	Downlink
Slot per frame	16
Number of bits in the DPCCH (Pilot/TPC/TFCI)	4/2/0
Number of bits in the DPDCH per each slot	4
Spreading Factor (DPDCH)	512
Spreading factor (DPCCH)	512
Modulation	QPSK
3dB bandwidth	4.096MHz
Shaping filter	Root raised cosine (roll off 0.22)
Power amplifier	Ideal
Propogation channel	AWGN

FIG. 25C

	N_{pilot} = 8				N_{pilot} = 16							
Symbol #	0	1	2	3	0	1	2	3	4	5	6	7
Slot #1	11	00	00	10	11	00	00	10	11	00	00	10
2	11	00	00	01	11	00	00	01	11	10	00	10
3	11	11	00	00	11	11	00	00	11	10	00	11
4	11	10	00	01	11	10	00	01	11	00	00	00
5	11	11	00	11	11	11	00	11	11	01	00	10
6	11	00	00	10	11	00	00	10	11	11	00	00
7	11	10	00	10	11	10	00	10	11	01	00	11
8	11	10	00	11	11	10	00	11	11	10	00	11
9	11	00	00	00	11	00	00	00	11	01	00	01
10	11	01	00	10	11	01	00	10	11	01	00	01
11	11	11	00	00	11	11	00	00	11	00	00	10
12	11	01	00	11	11	01	00	11	11	00	00	01
13	11	10	00	11	11	10	00	11	11	11	00	00
14	11	01	00	01	11	01	00	01	11	10	00	01
15	11	01	00	01	11	01	00	01	11	11	00	11

FIG. 25D

Symbol rate	Symbol #	Channel	Corresponding word of length 15
N_{pilot} = 8	1	I-CH	$-C_3$
		Q-CH	C_4
	3	I-CH	C_1
		Q-CH	$-C_2$
N_{pilot} = 16	1	I-CH	$-C_3$
		Q-CH	C_4
	3	I-CH	C_1
		Q-CH	$-C_2$
	5	I-CH	$-C_7$
		Q-CH	C_8
	7	I-CH	C_5
		Q-CH	$-C_6$

FIG. 26A

Parameters	Uplink
Number of slots per frame	15
Number of bits in the DPCCH(Pilot/TPC/TFCI/FBI)	6/2/2/0
Number of bits in the DPDCH per each slot	10
Spreading factor (DPDCH)	256
Spreading factor (DPCCH)	256
Modulation	HPSK
3dB bandwidth	3.84MHz
Shaping filter	Root raised cosine (roll off 0.22)
Power amplifier	Ideal
Propagation channel	AWGN

FIG. 26B